

## **REMARKS**

The office action of July 2, 2004 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1 through 8 have been cancelled and claims 9 through 15 are being added by this response.

### **Objections to the Abstract**

The Examiner has rejected the Abstract, stating:

The abstract of the disclosure is objected to because it exceeds the 150 words limit. Correction is required. See MPEP § 608.01(b).

The original Abstract has, accordingly, been deleted and a new replacement Abstract added. Reconsideration and withdrawal of the objection is, therefore, respectfully requested.

### **Rejection(s) under 35 U.S.C. §102**

Claims 1, 2 and 8 were rejected under 35 U.S.C. 102(b) as being anticipated by *Alfano et al.* (5,293,872). The Examiner states that:

Alfano et al. teaches method and corresponding apparatus for distinguishing of matter adhered to an inside of a vessel using Raman spectroscopy. With reference to applicant's claim 1, figures 6 and 9 of Alfano et al. below clearly teach a guiding apparatus 109 including a main body, a flexible insert portion extending from said main body portion and having a window formed in a distal end thereof, and a channel extending through said main body portion and insert portion and reaching said window, said insert portion being able to be inserted into said vessel; said Raman analysis system including a flexible channel 125/80 to be inserted into said channel and whose distal end is faced with said window, an excitation optical fiber 81 and a light receiving fiber 83 which are both received in said insert cable, a light source 121/135 connected to basal end of said excitation optical fiber, and a spectroscope 127 connected to a basal end of said light receiving optical fiber; and an excitation light emitted from said light source 121/135 projected through said window via said excitation optical fiber 81 and Raman scattered by impinging on said matter adhered to the inside wall of said vessel, spectrometer 127 via said light receiving optical fiber 83, and thus said matter adhered to the inside wall of said vessel being analyzed, column 7 through 9, more specifically column 7 lines 20-33 and column 8. With respect to claim 2 figures 6 (above) and 7 and column 7 lines 20-33 clearly diagram and discuss, respectively, a single number of said excitation optical fiber 81 and plural number of said light receiving optical fibers 83; and at a distal end portion

of said insert cable, said single number of excitation optical fiber 81 is arranged at a central area thereof and said plural number of light receiving optical fibers 83 are arranged in such a manner as to surround said excitation optical fiber 81. Finally with respect to claim 8 Alfano et al. column 9 lines 9-28 recites that the endoscope 141 (interpreted as the guiding apparatus of the applicant) is sized and shaped to fit within an artery or other blood vessel.

Applicant respectfully disagrees with this rejection, but has (nonetheless) replaced these claims with new claims superseding the grounds for rejection stated.

New claim 9 basically combines the limitations of original claims 1, 2 and 3, overcoming the rejection under 102. It is, therefore, respectfully suggested that the rejection of independent claim 1 and dependent claim 2 as being anticipated by *Alfano et al.* is overcome in new claim 9. Dependent claims 10 and 11, being dependent upon and further limiting independent claim 9, should also be allowable over 102 for that reason, as well as for the additional recitations they contain.

Reconsideration and withdrawal of the 102 rejection are, for aforesaid reasons, respectfully requested.

### **Rejection(s) under 35 U.S.C. §103**

Claims 4 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Alfano et al.* in view of *Janes et al.* Claims 3, 6 and 7 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Alfano et al.* in view of *Wach et al.* With regard to claims 4 and 5, the Examiner states that:

Alfano et al. teaches an apparatus for distinguishing matter adhered to the inside wall of a vessel using Raman spectroscopy. With respect to claims 4 and 5 Alfano et al. does not explicitly recite said optical means for deflecting an optical axis of said excitation light in a direction intersecting a center axis of said bundle of light receiving optical fibers is disposed at a distal end of said excitation optical fiber, wherein a distal end face of excitation optical fiber is slanted with respect to an axis of said excitation optical fiber and said distal end face is provided as said optical means. The Janes et al. reference teaches a device for optical diagnosis of tissue using a probe with a bundle of optical fibers having a beveled surface, column 6 lines 52-62. Figure 6A of Janes et al. below diagram the bundle of optical fibers having a beveled surface.

The beveled or tapered structure of the distal ends of the optical fibers shown above satisfies the applicant's limitation to said optical means for deflecting an optical axis of

said excitation light in a direction intersecting a center axis of said bundle of light receiving optical fibers is disposed at a distal end of said excitation optical fiber, wherein a distal end face of excitation optical fiber is slanted with respect to an axis of said excitation optical fiber and said distal end face is provided as said optical means. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the beveled or slanted optical fiber surface of Janes et al. into the probe of Alfano et al. because such a structure provides for controlled light transmission and detection as taught by Janes et al., column 1 lines 45-47 and column lines 61-64. Therefore providing a more efficient analysis of the tissue.

Finally the combination of Alfano et al. in view of Janes et al. does not explicitly teach said excitation optical fiber arranged at an outer side in a radial direction of said bundle of light receiving optical fibers. It would have been obvious to a person of ordinary skill in the art to provide for such an arrangement because applicant's function of maximizing emission and detection of light by the slanted or beveled optical fiber surface is satisfied by the structure of Alfano et al. in view of Janes et al.

And, with regard to claims 3, 6, and 7, the Examiner states that:

Alfano et al. teaches an apparatus for distinguishing matter adhered to the inside wall of a vessel using Raman spectroscopy. Alfano et al., figure 1, diagrams a filter 17 disposed between excitation optical fiber and light source.

Alfano et al. does not teach a film-like excitation filter adhered to the distal end of excitation optical fiber and a film-like filter adhered to the distal end of the receiving optical fiber as claimed in 6 and 7. In reference to claim 3 Alfano et al. does not teach the light receiving plate with corresponding film-like filter adhered to it for excitation and receiving optical fibers.

Wach et al. teaches filtering optical fibers by depositing thin films directly onto the ends of the optical fiber (or adhered to distal ends as claimed by applicant) to be used to produce high-quality, high performance filters, see Abstract. It would have been obvious to a person of ordinary skill in the art to have deposited/adhered the film-like filters onto the ends of optical fibers as taught by Wach et al. into the probe system of Alfano et al. because it allows effective and efficient manipulation of the light delivery and reception region especially during Raman analysis as taught by Wach et al. Furthermore it would have been obvious to have alternatively adhered the film-like filters on the light plate/window of the probe because it provides the equivalent function of filtering the illumination and detection light thereby improving Raman scattering analysis.

Applicant respectfully disagrees with these rejections.

As to original claim 3, the applicant claimed that said transparent light receiving plate has a center hole and said transparent excitation small piece is fitted into said center hole. This is taught by neither of the references cited against claim 3. Wach teaches filtering optical fibers by

depositing thin films directly onto the ends of the fibers. And, even if it would have been obvious for a person skilled in the art to have alternatively adhered the film-like filters on the light plate as the examiner says, it would not have been obvious to have a hole in the plate and a small piece fitted into the hole. Thus, claim 9 (which combines original claims 1, 2 and 3) cannot be obtained even if the cited documents are combined. Dependent claims 10 and 11, being dependent upon and further limiting new independent claim 9, should also be allowable over 103 for the aforesaid reason(s), as well as for the additional recitations they contain. Reconsideration and withdrawal of the 103 rejection are, for these reasons, respectfully requested.

The rejection of original claims 4 and 5 under 103 is superseded by and in new independent claim 12. This claim is similar to original claims 4 and 5, but it is more limited in that a distal end face of said bundle of light receiving optical fibers is orthogonal to a center axis of said bundle of light receiving optical fibers. This restriction is a matter which can be easily discerned in the description of the present invention.

In claim 12, only the excitation optical fiber has a slant distal end face. The excitation optical fiber is arranged at an outer side in a radial direction of the bundle of light receiving optical fibers. By this, the excitation light approaches the center of sight field of the light receiving optical fibers for a while after coming out of the slant distal end face of the excitation optical fiber and then the light passes through the center of the sight field so that it can impinge on a place of the vessel inside wall nearer to the center of the sight field.

On the other hand, in Janes et al., the distal end faces of all fibers 111a-114g are slanted and the light projecting fiber 114g is arranged at the center of surrounding light receiving fibers 111a-111f. Even if Janes et al. is combined with Alfano, claim 4 can never be obtained and the effect mentioned above also cannot be obtained. Consequently claim 12 should be allowed. Dependent claims 13, 14 and 15, which further limit claim 12 should, likewise, be allowable.

Reconsideration and withdrawal of the 103 rejections are, for the aforesaid reasons, respectfully requested.

### Conclusion

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

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